

## **TRAY FOR REFRIGERATOR**

### **BACKGROUND OF THE INVENTION**

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#### **1. Field of the Invention**

The present invention relates to a refrigerator, and more particularly, to a tray for a refrigerator capable of securely storing articles in an inner surface of a door for opening and closing a storage space of the refrigerator.

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#### **2. Description of the Related Art**

FIG. 1 shows a front view of an interior configuration of a related art refrigerator in a state where its doors are opened. Referring to FIG. 1, a refrigerating chamber 20 is defined at an upper portion in a main body 10 of the refrigerator. A plurality of shelves 22 are installed at a predetermined vertical interval within the refrigerating chamber 20 which is divided into a plurality of spaces by the shelves.

The refrigerating chamber 20 is selectively opened and closed by a door 30 for the refrigerating chamber. A gasket 32 is attached to an inner surface of the door 30 at a position that is brought into close contact with a front surface of the main body 10 of the refrigerator corresponding to an opening of the refrigerating chamber 20. The gasket 32 prevents cold air from leaking from the refrigerating chamber 20 when the door 30 is closed. A plurality of baskets 34 for storing refrigerating foods are installed at the inner surface of the door 30 where the gasket 32 is surrounded along an edge thereof.

A freezing chamber 40 is formed at a lower portion in the main body 10 of the refrigerator, and at least a storage container 42 in the form of a drawer is also installed in the freezing chamber 40. The storage container 42 is slide in and out from the freezing chamber 40 in the same manner as a drawer so that the stored articles can be put into and taken out from the storage container.

The freezing chamber 40 is selectively opened and closed by a door 50 for the freezing chamber which is hinged to the main body 10 of the refrigerator. A gasket 52 for

preventing cold air from leaking from the freezing chamber is also attached to an inner surface of the door 50 along an edge of the inner surface of the door 50 so that it can be brought into close contact with a front surface of the main body 10 of the refrigerator.

5 However, a tray structure in the aforementioned related art refrigerator has the following problems.

Even though a user opens the door 50 for the freezing chamber, the user cannot view the interior of the storage container 42. To see the articles stored in the storage container 42, therefore, there is inconvenience in that the user must take out the storage container 42 from the freezing chamber 40.

10 Furthermore, since the storage container 42 provided in the freezing chamber 40 occupies a certain degree of space in the freezing chamber 40, the space in the freezing chamber 40 is relatively reduced. In addition, if some baskets 34 are to be installed at the inner surface of the freezing chamber door 50 in the same manner as in the refrigerating chamber door 30, the space in the storage container 42 in which the articles can be stored is  
15 too extremely reduced. For these reasons, a space defined between the inner surface of the freezing chamber door 50 and the storage container 42 has never been utilized until now. Therefore, there is a need to efficiently utilize the space corresponding to the inner surface of the freezing chamber door 50.

## 20 SUMMARY OF THE INVENTION

Accordingly, the present invention is conceived to solve the above problems in the related art. An object of the present invention is to provide a tray for a refrigerator capable of easily confirming stored articles.

25 Another object of the present invention is to provide a tray for a refrigerator by which a storage space with a storage contained in the form of a drawer provided therein can be more efficiently utilized.

According to an aspect of the present invention for achieving the above objects, there is provided a tray for a refrigerator, comprising a central boss provided on an inner  
30 surface of a refrigerator door, and a press plate of which one end is rotatably installed to

the central boss and the other end tends to turn around the boss in a direction in which it is brought into close contact with the inner surface of the door.

Preferably, a tray recess larger than the press plate is formed on the inner surface of the door so that the press plate can be positioned within the tray recess.

5            Preferably, the press plate includes a rotary shaft which is rotatably installed to the boss and is provided with an elastic member mounted thereto such that a first end of the elastic member is supported on a predetermined position on the inner surface of the door and a second end of the elastic member is supported on a portion of the press plate, thereby allowing the press plate to elastically move in the direction in which it is brought into close  
10        contact with the inner surface of the door.

Preferably, the press plate further includes an elastic support bar on which the second end of the elastic member is supported.

Further, the press plate may be manufactured by connecting a plurality of wires with one another.

15            Preferably, the press plate is made of transparent synthetic resin.

Preferably, the boss is provided in a mounting recess which is connected with the tray recess and covered by a cover.

In addition, a stopper for regulating a turning degree of the press plate may be further provided in the mounting recess.

20            Furthermore, the press plate may include a grip which is mounted at a side opposite to the one end of the press plate.

According to the present invention, there are advantages in that the storage space including the inner surface of the door can be efficiently and positively utilized through the tray for the refrigeration and the articles stored in the tray can also be easily confirmed.

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### **BRIEF DESCRIPTION OF THE DRAWINGS**

The above and other objects, features and advantages of the present invention will become apparent from the following description of a preferred embodiment given in  
30        conjunction with the accompanying drawings, in which:

FIG. 2 is a perspective view showing a main configuration of a refrigerator to which an embodiment of a tray according to the present invention is applied;

FIG. 3 is an exploded perspective view showing a detailed configuration of the tray according to the embodiment of the present invention; and

FIG. 4 is a perspective showing a state where the tray according to the embodiment of the present invention is employed.

## DETAILED DESCRIPTION OF THE INVENTION

Hereinafter, a preferred embodiment of a tray for a refrigerator according to the present invention will be described in detail with reference to the accompanying drawings.

FIG. 2 is a perspective view showing the configuration of a refrigerator to which a tray for a refrigerator according to the preferred embodiment of the present invention is applied, and FIG. 3 is an exploded perspective view of the detailed configuration of the tray according to the embodiment of the present invention.

Referring to these figures, a freezing chamber 110 serving as a storage space is defined at one side of a main body 100 of the refrigerator. A plurality of storage containers 112 in the form of a drawer are installed in the freezing chamber 110 so that articles can be separately stored in the storage containers. In this embodiment of the present invention, three storage containers 112 are arranged vertically throughout the interior of the freezing chamber 110.

The freezing chamber 110 is selectively opened and closed by a door 120. The door 120 is hinged to the main body 100 of the refrigerator at both upper and lower portions on one side end thereof so that it can be opened and closed. When the freezing chamber 110 is closed, an inner surface of the door 120 is brought into close contact with a front surface of the main body 100 of the refrigerator corresponding to an opening of the freezing chamber 110. At this time, to prevent cold air from leaking from the freezing chamber 110, a gasket 122 is provided at an edge on the inner surface of the door 120, i.e.

a predetermined portion that is brought into close contact with the front surface of the main body 100 of the refrigerator.

At least a tray recess 124 is formed on the inner surface of the door 120. The tray recess 124 is formed in an inner area that is defined by the gasket 122 provided along the edge of the inner surface of the door 120. In this embodiment, two tray recesses 124 are provided.

As viewed from the inner surface of the door 120, an additional mounting recess 125 is formed below the tray recess 124 on the inner surface of the door. The mounting recess 125 is formed below the tray recess 124 to have a width relatively smaller than that of the tray recess and corresponds to a space in which a structure for mounting a press plate 130 to be explained later on the door 120 is provided.

The press plate 130 is provided in the tray recess 124. The press plate 130 is generally shaped as a rectangle and configured to have a rectangular frame wire 132 of which opposite sides are coupled with a plurality of connection wires 133. Since the frame wire 132 and the connection wires 133 have a predetermined diameter, they are not easily bent even though an external force is exerted thereon.

The maximum area of the press plate 130 is slightly less than the area of the tray recess 124. Preferably, the press plate 130 is configured such that its area is a half of the area of the tray recess 124. Such a configuration can be easily seen from the tray recess 124 and the press plate 130 that are illustrated in a lower portion of FIG. 2.

A rotary shaft 135 is provided at a lower end of the press plate 130 and has its opposite bent ends that are connected to the frame wire 132. An elastic support bar 136 is provided between the opposite bent ends of the rotary shaft 135 so that the opposite bent ends can be connected with each other. In the embodiment, the elastic support bar 136 is installed in parallel with the rotary shaft 135, but it is not necessarily limited thereto. Alternatively, one side of the frame wire 132 may be used instead of the rotary shaft 135.

An elastic member 138 is installed on the rotary shaft 135 of the press plate 130. It is preferred that the elastic member 138 be a torsion spring. The rotary shaft 135 penetrates through the elastic member 138 of which a first end 138a is supported on a predetermined position on the inner surface of the door 120 and the other second end 138b

is supported on the elastic support bar 136. Due to the elastic member 138, an upper end of the press plate 130 tends to move into the tray recess 124.

A pair of the elastic member 138 may be installed such that the whole press plate 130 can be accurately and securely seated into the tray recess 124. The second end 138b  
5 of the elastic member 138 can be supported on a portion of the frame wire 132 other than the elastic support bar 136.

A grip 139 is provided at a portion of the frame wire 132 corresponding to the upper end of the press plate 130. The grip 139 is a portion that a user grasps with his/her hand when pulling out the press plate 130 from the tray recess 124. For example, the grip  
10 139 is preferably made of a slightly elastic material, because it is brought into close contact with an inner surface of the tray recess 124 or the exterior of the stored articles s due to an elastic force from the elastic member 138.

A central boss 140 for rotatably supporting the rotary shaft 135 is provided in the mounting recess 125. In the embodiment, two central bosses 140 are arranged in a line.  
15 The rotary shaft 135 is installed into a through-hole that is formed by penetrating through the central boss 140 in an axial direction of the shaft.

A variety of configurations for installing the rotary shaft 135 through the central boss 140 can be employed. For example, in a case where the central boss 140 is integrally formed with the inner surface of the door 120, the boss 140 is configured such  
20 that the rotary shaft 135 can be inserted into the boss through a slit that is formed on the boss and has a width smaller than the diameter of the rotary shaft 135. On the other hand, in a case where the central boss 140 is separately manufactured and then assembled onto the inner surface of the door, the boss is installed on the mounting recess 125 so that an opened portion thereof faces the mounting recess.

A cover 150 is used to prevent the interior of the mounting recess 125 from being  
25 seen from the outside. The cover 150 has the same area as that of the mounting recess 125 such that it can cover the mounting recess 125. To fix the cover 150 to the mounting recess 125, a configuration for coupling the cover 150 with the mounting recess 125 is preferably provided at a predetermined position where they come into contact with each  
30 other.

Furthermore, although it has not been illustrated in these figures, a stopper for preventing the press plate 130 from coming out too excessively from the tray recess 124 may be provided. That is, as viewed from the inner surface of the door, additional stoppers are installed at both sides of an opening of the mounting recess 125 so that the  
5 press plate 130 is caught on the stoppers so as not to coming out further from the mounting recess 125.

Hereinafter, an operation of the tray for the refrigerator according to the present invention so constructed will be described.

The press plate 130 is usually kept in a state where an upper portion thereof, i.e.  
10 the grip 139 of the plate 130 is brought into close contact with the inner surface of the tray recess 124 due to the elastic force from the elastic member 138. In such a state, a user can store the articles s in the tray of the present invention by merely pulling out the upper portion of the press plate 130.

When the user pulls out the press plate 130, the press plate 130 is turned outwardly  
15 around the rotary shaft 135 against the elastic force from the elastic member 138 so that a gap can be produced between the press plate 130 and the tray recess 124.

At this time, the user can simply store the articles s by merely inserting the articles into the gap produced between the press plate 130 and the tray recess 124. If the user releases the press plate 130 after inserting the articles s between the press plate 130 and the  
20 tray recess 124, the press plate 130 tends to return into the tray recess 124 due to a restoring force from the elastic member 138.

Therefore, the press plate 130 can bring the stored articles s into close contact with the tray recess 124. As a result, the stored articles s can be held in the tray recess 124 by means of the press plate 130, as shown in FIG. 4.

25 For reference, the tray of the present invention can be advantageously used to store relatively flat articles s therein. That is, the press plate 130 can be used to store the articles s that may not protrude too excessively from the inner surface of the door 120.

If the press plate 130 is turned outwardly too excessively from the tray recess 124 and then returns abruptly to its original position, the tray recess 124 may be damaged by  
30 means of the press plate 130. However, such a phenomenon can be avoided due to the

stopper for preventing the press plate 130 from being turned to a certain extent.

Although the present invention has been described in connection with a specific preferred embodiment of the present invention, it is not limited thereto. It will be apparent to those skilled in the art that various substitutions, modifications and changes  
5 may be made thereto without departing from the scope and spirit of the invention.